




February 2015

Name _____

Unit 0 – Essential Skills Quiz (NO calculators)

This is not going onto your report card. We are looking at progress and readiness... how do you think you will do....

I need some MAJOR revision of this material 	I need to do some MINOR revision of this material 	I am good to go! 
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INTEGERS

a) $-4 + (-5) = -9$

f) $-3 \times (-2) = 6$

b) $9 - (-3) = 9 + 3 = 12$

g) $-2 \times (-4) \times (-3) = 8 \times (-3) = -24$

c) $12 + 13 - 10 - (-2) = 25 - 10 + 2 = 15 + 2 = 17$

h) $81 \div (-9) = -9$

d) $3 \times 5 = 15$

i) $10 + (2 + 3) - (4) - (-2) \div 2 = 10 + 5 - 4 + 2 = 19$

e) $-4 \times (-2) = 8$

j) $(-20 \div 4) + 30 \div 2 \times (-3) = -5 - 15 \times -3 = -5 + 45 = 40$

RATIOS

Reduce each ratio

4:30
 $2:15$

12:120
 $1:10$

21:63:42
 $1:3:2$

Solve each ratio

2:7 = x:49
 $x = 2 \times 7 = 14$

5:9 = 30:54:12
 $x = 12 \div 6 = 2$

A recipe for pancakes calls for 2L flour and 3L milk. This makes 20 pancakes. If I need to make 50 pancakes, how much milk and how much flour do I need?

2	3	20	Need 5L of flour 7.5L of milk
4	6	40	
1	1.5	10	

$$\begin{aligned}
 j) & \left[-20 \div 4 \right] + 30 \div 2 \times (-3) \\
 & -5 + \left[30 \div 2 \times (-3) \right] \\
 & -5 + \left[15 \times (-3) \right] \\
 & -5 + (-45) \\
 & -50
 \end{aligned}$$

$$\begin{aligned}
 & -50 + (4 \times 2)(3 + 7) + (-10) \\
 & -50 + 8(10) + (-10) \\
 & -50 + 80 + (-10) \\
 & 20
 \end{aligned}$$

MPM1D

1.3 Operations with Fractions

Date: _____

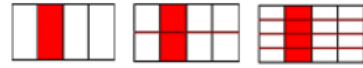
Equivalent fractions – fractions with same value

1. To find an equivalent fraction multiply the numerator and denominator by the same value.

Example: State 3 examples of fractions which are equivalent to

a. $\frac{2}{3}$ $\frac{6}{9}$ $\frac{20}{30}$
 $\frac{4}{6}$ $\frac{42}{63}$

b. 2 $\frac{2}{1}$ $\frac{4}{2}$ $\frac{8000000}{4000000}$
 $\frac{20000000}{10000000}$ $\frac{10}{5}$



$$\frac{1}{4} = \frac{2}{8} = \frac{4}{16}$$

Simplest terms (reduced)

Improper and Mixed Fractions

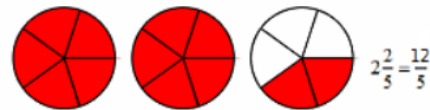
Example: Convert the following to the opposite form:

a. $\frac{24}{5}$
 $4 \frac{4}{5}$

b. $\frac{54}{7}$
 $7 \frac{5}{7}$

c. $2 \frac{1}{4}$
 $\frac{4 \times 2 + 1}{4} = \frac{9}{4}$

d. $5 \frac{6}{7}$ $\frac{5 \times 7 + 6}{7} = \frac{41}{7}$

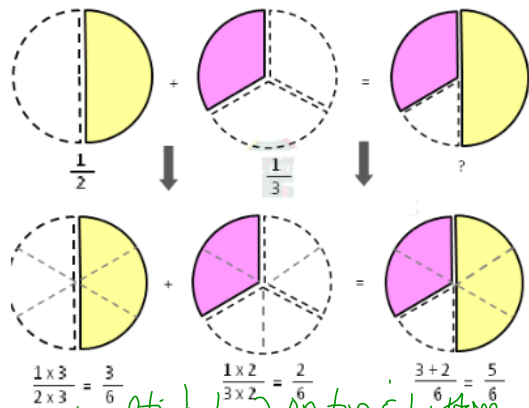
**Rule for Adding/Subtracting Fractions:**

1. Find a common denominator and write your two fractions as equivalent fractions with the common denominator.
2. Add/subtract the numerators and keep the denominator.
3. Do not forget to reduce your resulting fraction. The answer should be left as an improper fraction.

Example:

a) $\frac{2}{7} + \frac{5}{7} = \frac{7}{7} = 1$
 SAME! add the tops

b) $\frac{7}{10} - \frac{2}{5} = \frac{7}{10} - \frac{4}{10} = \frac{3}{10}$
 make these the same



multiply by 2 on top & bottom

Rule for Multiplying Fractions:

1. Multiply numerator by numerator and denominator by denominator.
Reduce to lowest terms.

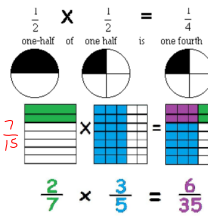
2. To simplify the process you can reduce across an equal sign

Example: a) Without reducing first $\frac{2}{3} \times \frac{7}{10} = \frac{2 \times 7}{3 \times 10} = \frac{14}{30}$

now try reducing first

$$\frac{2}{3} \times \frac{7}{10} = \frac{2}{3} \times \frac{7}{2 \times 5} = \frac{1}{3} \times \frac{7}{5} = \frac{7}{15}$$

$$\text{b) } \frac{2}{7} \times \left(\frac{3}{5}\right) = \frac{2}{7} \times \left(\frac{3}{5}\right) = \frac{6}{35}$$



$$\frac{2}{7} \times \frac{3}{5} = \frac{6}{35}$$

$$\frac{1}{2} \times \frac{5}{6} = \frac{1 \times 5}{2 \times 6} = \frac{5}{12}$$



$$\frac{1}{2} + \frac{1}{2} = \frac{2}{2} = 1$$

Rule for Dividing Fractions:

1. Multiply by the reciprocal of the fraction after the multiplication sign. Then multiply as outlined above.

Think a half filled jug shared between 4 friends

Example a) $\frac{5}{8} \div \frac{3}{4} = \frac{5}{8} \times \frac{4}{3} = \frac{20}{24} = \frac{5}{6}$

b) $\frac{3}{4} \div \frac{5}{18} = \frac{3}{4} \times \frac{18}{5} = \frac{54}{20} = \frac{27}{10}$

BEDMAS with fractions

a) $\frac{2}{3} \left(\frac{-4}{5} \right) \div \left(\frac{5}{6} - \frac{7}{4} \right)$

$$\frac{2}{3} \left(\frac{-4}{5} \right) \div \left(\frac{10}{12} - \frac{21}{12} \right)$$

$$\frac{2}{3} \left(\frac{-4}{5} \right) \div \left(\frac{-11}{12} \right)$$

$$\frac{-8}{15} \div \left(\frac{-11}{12} \right)$$

$$\frac{-8}{15} \times \left(\frac{12}{-11} \right) = \frac{-8 \times 4}{5 \times (-11)} = \frac{-32}{-55} = \frac{32}{55}$$

b) $-8 \frac{2}{3} \times \left(\frac{3}{2} \right) - \frac{1}{2}$

$$-12 \frac{1}{3} \times \left(\frac{3}{2} \right) - \frac{1}{2}$$

$$-26 \frac{1}{3} - \frac{1}{2}$$

$$-26 \frac{2}{3} - \frac{1}{2}$$

$$-26 \frac{4}{4} - \frac{1}{2} = -26 \frac{8}{4} - \frac{2}{4} = -26 \frac{10}{4} = -26 \frac{5}{2}$$

$$13.) 6 \frac{16}{18} \div 7$$

$$\frac{124}{18} \div 7$$

$$\frac{124}{18} \times \frac{1}{7}$$

$$\frac{124}{126}$$

$$\frac{62}{63}$$

$$14.) \frac{1}{2} \div \frac{3}{4}$$

$$= \frac{1}{2} \times \frac{4}{3} = \frac{4}{6} = \frac{2}{3}$$

$$= 2$$

Term	Definition	Example
Denominator		
Numerator		
Mixed Fraction		
Proper Fraction		
Improper Fraction		
Equivalent Fraction		

$$\begin{aligned} \text{a.) } & (-2) + 8 \times (-4) \\ & -2 + (-32) \\ & -2 - 32 \\ & -34 \end{aligned}$$

$$\begin{aligned} \text{b.) } & (-3) + 6 \div [4 - (-2)] \\ & (-3) + 6 \div (4 + 2) \\ & (-3) + 6 \div 6 \\ & -3 + 1 \\ & -2 \end{aligned}$$

$$\begin{aligned} \text{c.) } & 50 \div (-2 + (-3)) \times (4 - (-2)) \\ & 50 \div (-5) \times 6 \\ & -10 \times 6 \\ & -60 \end{aligned}$$

